EPA Region 7 TMDL Review

TMDL ID	328	*Water Body ID*	IA 03-NSK-00350L
Water Body Name	Mariposa		
Pollutant	Algae and Turbidity		
Tributary	unnamed creek		
State	Iowa *HUC*	0708010601	
Basin	Skunk River		
Submittal Date	12/1/2004		
Approved	yes		

Submittal Letter

State submittal letter indicates final TMDL(s) for specific pollutant(s)/ water(s) were adopted by the state, and submitted to EPA for approval under section 303(d) of the Clean Water Act.

A letter dated November 12, 2004 and received by EPA November 15, 2004 formally submitted this TMDL for approval. A revised version of this TMDL was received December 1, 2004 by attachment to email.

Water Quality Standards Attainment

The water body's loading capacity for the applicable pollutant is identified and the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources is described. TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.

Mariposa Lake was included in the 1998 303(d) list due to algae and turbidity impairments. When sufficient data was available in 2002 the Class A designated use was assessed as "partially supported." The Class B use has been "partially supported" since 1992. The assessments were based on narrative standards that "such waters shall be free from materials attributable to wastewater discharges or agricultural practices producing objectionable color, odor, or other aesthetically objectionable conditions." These assessments were based on measured chlorophyll and transparency values indicating impairment from algae and turbidity.

Numeric Target(s)

Submittal describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, site specific if possible, was developed from a narrative criterion and a description of the process used to derive the target is included in the submittal.

Water quality standards and beneficial uses are described as well as applicable narrative criteria. Phase I targets for this phased TMDL are established based on improving the lake's trophic state to correspond to a Trophic State Index (TSI) value for total phosphorus of <70, and for both chlorophyll and Secchi depth of <65. A secondary target is the attainment of aquatic life uses as measured by fisheries and biological assessments determined by the IaDNR Fisheries Bureau.

Link Between Numeric Target(s) and Pollutant(s) of concern

An explanation and analytical basis for expressing the TMDL through surrogate measures (e.g., parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae) is provided, if applicable. For each identified pollutant, the submittal describes analytical basis for conclusions, allocations and margin of safety that do not exceed the load capacity.

The State of Iowa does not have numerical water quality criteria for algae or turbidity. The TMDL uses the surrogate measure of TSI which links phosphorus concentrations to algal and turbidity conditions. By reducing the TSI for total phosphorus to <70 the TSIs for chlorophyll and Secchi depth should be reduced to <65 based on the relationships seen in this lake.

Source Analysis

Important assumptions made in developing the TMDL, such as assumed distribution of land use in the watershed, population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources, are described. Point, non point and background sources of pollutants of concern are described, including magnitude and location of the sources. Submittal demonstrates all significant sources have been considered.

There are no point source contributions of phosphorus to the lake. Annual loading from nonpoint sources including runoff, groundwater, internal load and airborne deposition was determined by model using ambient in-lake phosphorus concentrations. Nonpoint sources include row crop agriculture, a feed lot, septic systems, pit toilets and waste from wildlife and pets.

Allocation

Submittal identifies appropriate wasteload allocations for point, and load allocations for nonpoint sources. If no point sources are present the wasteload allocation is zero. If no nonpoint sources are present, the load allocation is zero.

Phase I of this TMDL is to reduce phosphorus loading to achieve an in-lake TSITP<70 resulting in TSIs for Secchi depth and chlorophyll of <65. This will be accomplished with a total phosphorus loading capacity of 330 pounds per year.

WLA Comment

There are no significant point sources for phosphorus in the watershed. The WLA is set to zero.

LA Comment

The load allocation based on target TSITP<70 is 300 pounds of phosphorus per year. Of this 290 pounds are allotted to watershed sources and 10 pounds to atmospheric deposition.

Margin of Safety

Submittal describes explicit and/or implicit margin of safety for each pollutant. If the MOS is implicit, the conservative assumptions in the analysis for the MOS are described. If the MOS is explicit, the loadings set aside for the MOS are identified and a rationale for selecting the value for the MOS is provided.

The margin of safety is explicit. The MOS is set at 30 pounds per year, this amounts to a 10% reduction of the calculated allowable load.

Seasonal Variation and Critical Conditions

Submittal describes the method for accounting for seasonal variation and critical conditions in the TMDL(s).

TSI targets are applied to the growing season when algal blooms are prevalent. The model selected uses growing season mean total phosphorus concentration to calculate an average annual total phosphorus load.

Public Participation

Submital describes public notice and public comment opportunity, and explains how the public comments were considered in the final TMDL(s).

Presentations were made to the Jasper County Soil and Water Conservation District on April 20, 2004 and the Jasper County Conservation Board June 10, 2004. A public meeting was held in Newton on October 26, 2004 and the TMDL was placed on the IaDNR website for public review. Comments were reviewed and where appropriate, incorporated into the TMDL.

Monitoring Plan for TMDL(s) Under Phased Approach

The TMDL identifies the monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of WQS, and a schedule for considering revisions to the TMDL(s) (where phased approach is used).

Follow-up monitoring will continue to meet, at a minimum, the minimum data requirements established by Iowa's 305(b) guidelines. An assessment will be completed by 2010 containing 3 lake samples per year for three years or 10 lake samples over a two year period.

Reasonable assurance

Reasonable assurance only applies when reduction in nonpoint source loading is required to meet the prescribed waste load allocations.

No allowances for increased nonpoint source phosphorus loading were included in the TMDL. Significant changes in the watershed land use was deemed unlikely. No waste load allocation is included in this TMDL.